WHAT IS CLAIMED:

1. A method for communicating pulses positioned in time in accordance with a time layout, comprising:

transmitting a pulse train signal comprising at least one pulse having at least one predefined pulse characteristic, wherein a predefined pulse characteristic corresponds to an arrival time of the at least one pulse at a receiver;

recovering a received pulse train signal in accordance with the arrival time of the at least one pulse;

measuring one or more interference samples at one or more interference sample times that do not coincide with an arrival time;

modifying the received pulse train signal in accordance with a measured interference sample; and

varying at least one of said one or more interference sample times until one or more received signal quality measures satisfy a predefined signal quality criterion.

2. The method of claim 1, wherein one or more arrival times are relative to one or more interference sample times.

3. The method of claim 1, wherein modifying the received pulse train signal includes removing interference in accordance with an interference sample.

4. The method of claim 1, wherein the received pulse train signal is recovered by correlating a template signal at an arrival time of a pulse.

5. The method of claim 1, wherein the received pulse train signal is recovered by correlating a template signal with a plurality of arrival times of a plurality of pulses to produce an information signal.

6. The method of claim 1, wherein a received signal quality measure corresponds to at least one of a:

signal strength value,

bit-error-rate, and

signal-to-noise ratio.

7. The method of claim 1, wherein a received signal quality measure pertains to at least one of:

the received pulse train signal; and

the received pulse train signal combined with at least one interference sample.

8. The method of claim 7, wherein the received signal quality measure is determined for at least one of:

an individual pulse of the received pulse train signal,

a plurality of pulses of the received pulse train signal,

a subset of a plurality of pulses of the received pulse train signal, and

all of the pulses of the received pulse train signal.

9. The method of claim 1, wherein the received signal quality measure is determined periodically.

10. The method of claim 1, wherein an interference sample time is a discrete time position.

11. The method of claim 1, wherein an interference sample time is a sample time duration.

12. The method of claim 11, wherein a sample time duration is modified until the predefined signal quality criterion is satisfied.

13. The method of claim 12, wherein an interference sample is measured by correlating a template signal over each sample time duration.

14. The method of claim 13, wherein the shape of the template signal is varied.

15. The method of claim 1, wherein the received pulse train signal is modified in accordance with at least one of a weighting factor and a weighting factor curve.

16. The method of claim 1, wherein varying an interference sample time comprises shifting the interference sample time.

17. The method of claim 16, wherein the interference sample time is shifted randomly.

18. The method of claim 16, wherein the interference sample time is shifted in accordance with an interference sample time shift increment.

19. The method of claim 18, wherein the interference sample time shift increment is a variable increment.

20. The method of claim 19, wherein the interference sample time shift increment is increased.

21. The method of claim 19, wherein the interference sample time shift increment is decreased.

22. The method of claim 16, wherein the interference sample time is shifted using at least one of a:

Newton-Raphson method,
steepest descent method,
secant method,
conjugate gradients method,
first derivative test method, and
second derivative test method.

23. The method of claim 16, wherein the interference sample time is shifted to a time determined by interpolation based on a number of received signal quality measures.

24. The method of claim 16, wherein the interference sample time is shifted to a time determined by extrapolation based on a number of received signal quality measures.

25. The method of claim 1, further comprising:
varying the number of interference samples.

26. The method of claim 25, wherein the number of interference samples is varied randomly.

27. The method of claim 1, wherein a predefined pulse characteristic comprises at least one of: pulse amplitude, pulse width, pulse polarity; and pulse type.

28. The method of claim 1, wherein the arrival time of the at least one pulse is specified by a code element of a code.

29. The method of claim 1, wherein the interference sample time is specified by a code element of a code.

30. The method of claim 1, wherein the arrival time of the at least one pulse and the interference sample time are specified by code elements of a code.

31. A method for communicating pulses positioned in time in accordance with a time layout, comprising:

transmitting a pulse train signal having pulses positioned in time in accordance with code elements of a first code;

receiving the pulse train signal in accordance with code elements of a second code, wherein the code elements of the second code comprise the code elements of the first code and additional code elements.

32. The method of claim 31, further comprising:

measuring interference samples at times specified by the additional code elements of the second code to remove interference from the received pulse train signal.

33. The method of claim 31, wherein a code element of the first code corresponds to an arrival time and an additional code element corresponds to an interference sample time.

34. The method of claim 31, further comprising:

determining a received signal quality measure for the received pulse train signal; and

varying the additional code elements of the second code until a predefined quality criterion is satisfied.

35. A method of coding interference sample times, comprising the steps of:

producing a first code having a plurality of code elements that specify a position in time of a plurality of pulses in accordance with a layout; and

producing a second code having at least one additional code element from said first code wherein the at least one additional code element specifies an interference sample time in accordance with the layout.

36. A method of coding interference sample times, comprising:

producing a code having at least one code element that specifies an interference sample time in accordance with a layout.

37. A method for communicating pulses positioned in time in accordance with a time layout, comprising:

transmitting a pulse train signal having pulses positioned in time in accordance with code elements of a first code;

receiving a subset of the pulse train signal in accordance with code elements of a second code, wherein the code elements of the second code comprise a subset of the code elements of the first code.

38. A method for communicating pulses positioned in time in accordance with a time layout, comprising:

transmitting a pulse train signal having pulses positioned in time in accordance with code elements of a first code;

receiving the pulse train signal in accordance with code elements of the first code;

measuring interference samples at times specified by code elements of a second code to remove interference from the received pulse train signal.